



Town Camels: pastoral innovation in a fast changing world. A case study from Gode Town, Somali Regional State, Ethiopia

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Town Camels: Pastoral Innovation in a fast Changing World

Case Study from Gode Town, Somali Regional State, Ethiopia



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Executive Summary

Because of demographic, socio-economic and political factors, Ethiopian pastoralists are settling down - triggering unprecedented growth of small towns and the creation of urban centers throughout the pastoral lands of Ethiopia. Pastoralists have had to adapt to new situations or risk being left out - without sustainable incomes. One initiative taken by 'town pastoralists' (is camel dairy production in and around small towns and urban centers. Contrary to their traditional beliefs, increasingly pastoralists are keeping camels nearer to towns to supply milk to growing urban markets and capitalize on increasing growth of township. This innovative effort on the part of pastoralists to sustain their livelihood has not yet been adequately tracked and documented.

To have a better understanding of as where the new urban camel husbandry pastoral innovation emanates from, the following has been identified as the main sources: First, growth of small towns has intensified in the study area mainly because of the return of huge population of Ethiopian (of Somali origin) refugees from Somalia, the decentralization that took place in the country also attracted many pastoral communities to urban areas and also to have better access to food aid, political representation and basic human services pastoralists have moved to urban areas or either established their own sedentary villages. This expansion of urbanization has led to increased demand for livestock products and this attracted pastoralists to produce on the outskirts of urban areas. Secondly, the expansion of livestock markets and milk trading routes has created opportunities for pastoralists in terms of value addition for their products. Finally, recurrent droughts which have been occurring in pastoral areas have forced many pastoralists to abandon their traditional mobile production system and settle in urban areas.

This study examines innovation in the pastoral systems of Ethiopia as an outcome of significant changes in the livelihood and production systems. Specifically, this study examines the innovation of camel milk production for distribution and sale in small towns. Conducted in Gode Town in eastern Ethiopia, the study employed focus group discussions, field observations, and personal interviews to collect its primary data. Secondary sources were also examined.

Gode Town was chosen for this study because it fit the profile of a small town rapidly growing with the expanded marketing of camel milk clearly established. More than 65 percent of those who adopted the new camel milk production system had been forced out of their villages by drought, while others moved because they were convinced by the economic value of this new production system.

During the dry season the average daily milk production of a camel is around 2.43 liters, while it produces on average of 3.38 liters in normal/wet season. The new system of producing camel milk for sale in towns results in an average milk production of 4 liters during the dry season and 6.25 liters in normal/wet seasons. From this, 3 liters and 4.52 liters on dry and normal seasons respectively are marketed for sale. However, the income of the households marketing the milk remains the same year-round because of a significant price variation between the two seasons (i.e. 15 birr/liter and 10 birr/liter during the dry and normal/wet seasons, respectively). It was identified that the new system of dairy camel milk production in towns has a number of advantages over the old one, including: lower work load, better access to market, and better access to basic social services. However, the major challenges affecting their production were also indicated: diminishing natural fodder, lack of recognition as town residents, and lack of support for the system.

Our study shows the possibility of rearing camels in urban centers for improved livelihood for large populations of Somali pastoralists who are exiting traditional pastoralism. The growth of marketing in camels' milk, and associated improvements in the incomes of Somali returnees to Ethiopia and Somali refugees who are mainly involved in the trade, has had a number of knock-on changes in resource access, camel husbandry, and the social relations governing these.

Town pastoralists have been able to make new arrangements in the form of cooperatives to herd their camels together and to use both communal rangelands and private enclosures to feed their camels. Moreover, the connection between the old and new system also makes the new system less alien to pastoralists and less disruptive to traditional institutions and beliefs. With the rising demand for fresh camel milk because of health (diabetes) and higher urban populations, settled dairy camel production is surely the future of pastoralism. Technical challenges of specialized dairy camel breeds and research on camels' feed are still there and will need to be addressed. However, traditional camels vital role in the economy of Somali pastoralists could be maintained in urban settings provided that adequate support is given to the innovations started in Gode and other major towns.

With the rising demand for fresh camel milk because of health (diabetes) and higher urban populations, settled dairy camel production is surely the future of pastoralism. Help from governmental and non-governmental organizations is required to enable pastoralists to cope with existing realities and to improve on the initiative. Help may come in various forms from the mere recognition of the innovation so that grazing sites will be allocated for town-pastoralists, to delivery of trainings and support such as veterinary medicine, irrigation pumps for fodder production, easy access to urban centers and transportation and provision of micro-finance (loans).

1. Introduction

In the past two decades Ethiopian pastoralists have gone through enormous social, political and economic changes that reshaped their way of life. Socially, through an advocacy tool known as Ethiopian Pastoralist Day, pastoralists have been able to unite their voices and demand unique policy frame works and strategies for their development. This movement has become a permanent platform for interaction among pastoralists, policy makers, donors and development practitioners on annual basis where pressing pastoral issues are dealt with in depth and directives given for action (PFE, 2006).

Politically, the Federal system Ethiopia adapted 20 years ago has opened a wide window of opportunity for pastoral communities to govern their own affairs at local level. The decentralization and devolvement of power and resources to the local level clearly manifests the departure from centralized mode of governance that assures and strengthen to certain extent popular participation in all arenas of life. The relative peace and stability in pastoral areas have encouraged many former pastoralists to move into towns to acquire services like health and education. With politics of national integration the basic infrastructure sector developments in pastoral areas of the country has intensified and start contributing to improved linkages among different economic zones.

In Economic field, pastoralists are more exposed than ever before to market forces tending their production into commercial goods than mainly using their produces for subsistence purpose. The increasing demand for livestock products at both national and international levels and the penetration of small traders and expansion of secondary livestock markets into the remote pastoral areas along with ever improving livestock prices has encouraged pastoralists to sell more animals.

The demand for livestock is not limited to cattle and small ruminants like sheep and goats. Surprisingly enough camels become of high demand and seem to remain the most lucrative business for the future to come. For instance, according to Felleke (2003) and Behnke (2010), Ethiopia has 2.4 million camel population in which 458,760 are lactating camels each year with an annual milk production of 608,315,760 liters that roughly generates 3,345,736,680 birr. Exporting camels from Ethiopia has become a booming business supporting local economies, generating employment and contributing foreign earning to the national economy (MoFED 2005). Beside live animals sell, milk is becoming the main pastoral product for commercialization as its demand also increased with the fast growing small towns' population in the country as a whole and that of pastoral areas specifically. Women are usually involved in milk trading and has served them both as income for their households and made them somehow independent of their spouses.

As a result of these factors, many changes have been observed in pastoral areas of Ethiopia. Among the most noticeable ones: intensified growth of small towns, fast growing population, commercialization of pastoral produces, decentralized local governance and quick advancement of environmental problems. And hence, the changes pastoralists are facing and responding to are too many, but can be summarized as an elder eloquently puts: *“ we are responding to natural changes from rain fall pattern to the unfavorable plant species, from social life starting at family to political governance of federalism, and to the borderless movement of technologies, commercial goods and people, and global markets presenting both opportunities and challenges at our door steps”*.

Ethiopian pastoralists have tried to adjust to these ecological, socio-economic and political realities and capitalize on or curb negativities of their externalities. For instance, similar to other pastoral communities in the Horn, pastoralists residing in Somali region of Ethiopia believe that camel husbandry (herding and breeding) is possible only in remote areas of country side isolated from modern technologies and urban settlements. Until very recently a visit by urban based family member were not welcomed during calving seasons as pastoralists believe that odor of strangers' risks health of young animals. Moreover, pastoralists are wary of diseases their herd may contract, evil eyes of poor urbanites which they believe would harm their camel herd, and shortages of fodder.

However, in recent years due to multitude of factors affecting pastoralist way of live and their livelihoods, this attitude is changing gradually. Increasingly pastoralists are keeping camels nearer to towns to supply milk to growing urban markets and capitalize on increasing growth of township. This resulted in a new dairy camel initiative born out of an opportunity swelling town centers presented and necessity as both returnees and pastoralists on the verge being dropped out of the system lack sufficient herd size to sustain them in rural setting. Adaptors of the new dairy camel initiative keep only milking she-camels in urban areas and they send dry ones to their relatives in rural areas keeping the tie between the new and traditional camel production system.

Using various innovations, pastoralists have tried to sustain their livelihood and preserve their way of life and yet little emphasis was given in the past to document them. This paper aims at exploring and documenting pastoral innovation in some parts pastoral areas of Ethiopia. The paper mainly focuses on a case study conducted on dairy camel initiative in and around Gode town, Eastern Ethiopia, to meet the growing demand from swelling urban population. It explores the process the initiative went through and where it might be heading in the future in terms of causes of the innovation, identities of the innovators, winners and losers of the innovation and relevance new system from socio-economic and environmental point of view. The paper also briefly documents new trends in some pastoral areas of Ethiopia to shed more clarity on the case study. These trends indicate reasons for pastoral innovation and set the context in which the case study emerges as an innovative measure. This study is, however, incomplete by itself and has to be viewed within the context of wider responses that pastoralists adapting for the improvement of their livelihood systems.

The case study was conducted in Gode town, where more than 43,134 people live (CSA, 2007) and increasingly, destitute agro-pastoralists are becoming settled farmers. Especially since collapse of Siyad Bare regime in 1991, the population of Gode town has swelled by both returnees from Somalia and drop-outs from pastoral economy (Ayele *et al.*, 1999). Various methods were used to capture environmental, economic and social dimensions of pastoral innovations in general and that of the new dairy camel initiative in particular. Initially, related literatures were reviewed and discussions were made with key informants from various institutions (officials at regional and federal level, business people and researchers). Field visits were arranged to eastern and south-eastern parts of the country and during the field visits discussion were made with local officials, elders and religious and clan leaders to grasp their take on emerging new trends in their localities. Using list of two camel dairy cooperatives established in kebele 05 and 06 of Gode town, 25 individuals were selected for one-to-one interview using pre-tested semi-structured questionnaires. Two focus group discussions were also made with pastoralists who adapted the new camel dairy imitative and those who did not were arranged to solicit different perspectives. After undertaking the initial analysis, a second field visit was made to communicate initial finding and cross-check the finding with reality of the ground.

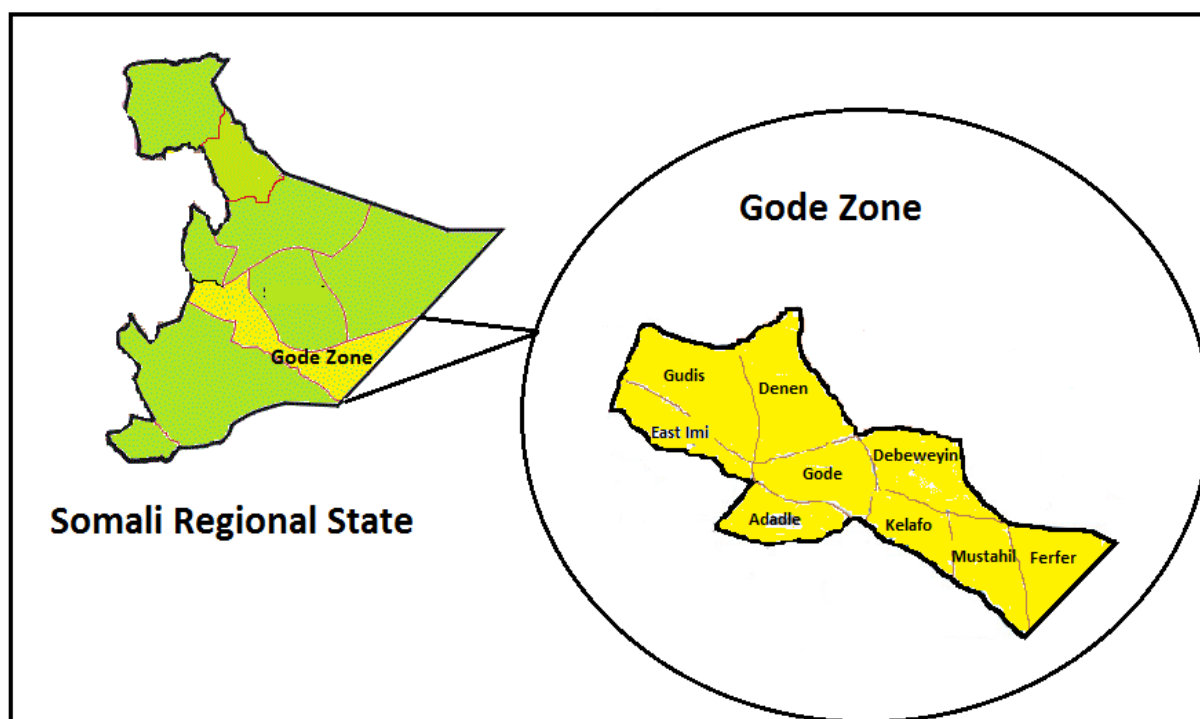


Fig 1: A map showing location of Gode town, where the case study took place

2. Trends influencing pastoralist innovation in Somali Region, Ethiopia

Due to the general changes mentioned above plus the obvious environmental factors new trends are emerging in pastoral areas of the country. Unfortunately, those trends are not tracked and documented. However, it is worth to present some of the main trends observed during the undertaking of this study for better understanding of as where pastoral innovations emanates from. These are:

a) Growth of small towns

The reasons for the growth of small towns are many and complex. Also it varies from one region to the other and very hard to generalize. It should be understood what presented here are very much limited to the areas of eastern and south- eastern Ethiopia specifically, southern part of Somali region (Godey, Afdheer and Liban zones) and Guji and Borana zones of Oromia region.

The 1977 Ethio-Somalia war has resulted many Ethiopian Somalis to flee to Somalia. After the civil war has started in southern Somalia, in 1991, scores of people started entering Ethiopia, part of these people were returnees who has previously went to Somalia and many of them were Somali refugees. With the return of returnees and refugees from Somalia, small towns and villages in the south-eastern part of Ethiopia expanded. Towns like Dollo, Filtu, Nagelle, Moyalle, Charati and Gode were swollen by returnees.

The returnee population, while originally from pastoralist backgrounds, had resided in camps and settlements in Somalia. Being accustomed to town life, and lacking livestock and knowledge of herding to return to a customary pastoralist livelihood, most returnees chose to settle in the outskirts of towns where they could have better access to basic services such as education, health and water. Crucially, the returnee population, although with no or very few animals, sought milk and other livestock products, particularly from camels. However, with camels by and large kept far from towns, camel's milk remained scarce in towns. Driven by this scarcity, camel milk trading and dairy camel initiative in and around urban centers

started to flourish. Currently, our observation show, milk is a prime trading commodity in which women from both pastoral and urban setting capitalizes on.

Second, the devolution of power and resources to the locals at wereda (district) level attracted more pastoral communities to urban centers administered by their own sons and daughters in their own local languages. So, urban settings become more favorable to pastoralists more than ever before in the history of Ethiopia.

Third, to have better access to food aid, political representation and basic human services pastoralists not only poured into existing settlements but also established new villages and settlement centers to get the attention of local administrations and NGO assistances.

b) Expansion of rain-fed cultivation in rangelands

Aggressive cultivation expansion in to the rangelands of Ethiopia has intensified in the recent years owing to the fact that government agricultural policy encourages such endeavors both directly and indirectly to boost local production. Each wereda in the country should have plans to increase its crop production by certain percent each year (Desalegn, 2008). To do so there are two basic options; one use of technology and fertilizers to increase production on land that is already under cultivation and two, bringing new lands under-cultivation. This has deprived pastoralists from key dry season grazing areas and accelerated rangeland degradation on the remaining rangelands due to higher concentration of livestock. In Somali region, cultivation whether it is rain-fed, small scale or large scale irrigation has yet to pose the kind of challenges it has posed to other pastoral communities such as Afar and Boran pastoralists. Large scale irrigation initiated by previous governments has been stopped with its collapse and because of security concerns the Somali region has not attracted large scale irrigation investments.

A number of factors are behind the current expansion of cultivation. Opportunistic cultivation is and was one of coping strategies of pastoralists. Declining livestock holding, government encouragement and incentives, availability of machineries which eased large scale cultivation are just some of the factors behind increasing cultivation. On the other hand local investors' interests in agricultural activities took a large track of pastoral grazing lands in areas where good road network infrastructure exists. Wheat is the main crop but beans, sesame and other cash crops are grown also for export. There are also large numbers of dropouts from pastoral production systems who opt in land cultivation.



Fig 1: Wheat field near Negelle.

c) Livestock fodder production and irrigated farming.

In Somali Regional State, perennial rivers like Shabelle, Genalle, Dawa and Weyb flow through pastoral lowlands crossing thousands of hectares of fertile soil. Small scale irrigation projects mushroom on the banks of rivers to grow horticultural crops, maize and sesame.

Furthermore, fodder production for livestock in and around the urban centers emerging as new phenomenon to boost livestock production. Towns like Dollo Ado and Chirati in Somali region began the lead in transforming traditional pastoral production into what we term as '**urban pastoralism**'. Types of fodder production range from native grass and weeds to Alpha-alpha and Sudanese grass. The foliage of maize, beans and peas are also used as supplements. Fodder banking concept has began for commercial purpose at small scale with the support of government and NGOs in areas where irrigation is possible. The Somali Pastoral and Agro-pastoral Research Institute (SoRPARI) invested a lot of resources in the improvement of this initiative through researching the best suitable fodder species to the specific localities (SoRPARI, 2007).

However, the economics and technologies of fodder production in the lowlands through irrigation seems an emerging phenomenon to be explored, but it is obvious that it cannot substitute the opportunistic dry land grazing systems for livestock asset building for pastoralists. Commonly undertaken on small private paddocks, fodder producers have supplied fodder to both old cattle and new camel dairy production in and around urban centers. With the introduction of better performing forage species by SoRPARI and new customers of dairy camel adaptors, the market for fodder is on the rise and the potential for irrigated fodder production on river bases is still immense.



Fig 2a (right) shows fodder marketing in Dollo-ado while 2b (left) shows fodder produced using irrigation in Godey town

d) Expanding livestock markets

In pastoral areas of Ethiopia livestock markets were limited to certain known places that used to necessitate a long distance trekking of animals on foot. Now a day pastoralists have access to markets at much closer places to their homestead. New market opportunities are believed by pastoralists to have increased their bargaining power over the price of their animals unlike the former arrangements as they take back their animals if the prices are not reasonable. As Haji Mahmud from Filtu district said, ‘if I want to sell an animal I used to walk 130km to reach Negelle Borona livestock market, which is the nearest market available. Now, I sell my animal at Filtu town livestock market where I encounter less challenges and have a freedom and power to bargain over my animals’ price. Thanks for the changes that came before two decades.’ It also has many advantages for pastoralists in avoiding animal weight losses and contributing to their health and high price.

The markets are penetrating deep into pastoral communities creating various layers of market settings and new institutional arrangements such cooperatives and sales groups instead of an individual trekking his animal to the market by himself.

e) Milk trading routes

Camel and cattle milk trading has become a trend since the arrival of returnees in the pastoral areas as discussed above. Cattle milk used to be more popular in towns than camels milk. In recent years with high price than that of camel milk, however, the situation changed dramatically as camel milk is much more in demand than that of cattle milk. Price wise also camel milk exceeds by far cattle milk. According to the informants, in Gode town, the public prefers camel milk more than cattle milk and camel milk price is higher than cattle milk.

According to key informants interviewed for the case study, camel milk trade goes beyond big population centers in pastoral areas to neighboring countries like Kenya and Somaliland and even sometimes to the Gulf States. Increasing demand for camel milk is attributed mainly to growing urban population in major pastoral towns mostly Somali’s/Muslims including thousands of returnees, export to neighboring countries and Gulf States, and widely spread claims about the medicinal nature of camels’ milk worldwide (Wernery 2003).

During the study four trading routes have been identified. First, the Finchawa – Moyalle route in Borena zone of Oromia covers a distance of 360 kms to Kenyan border. Second, Boqol-manyo to Suftu in Liban Zone of Somali region covering 120 kms having linkage to Mandera town of Kenya. Third, Awsah to Addis Ababa in the eastern Shawa zone of Oromia serving mainly Somali refugees in Addis covers

200kms. Fourth, Babile to Tog-wachale route passing through Jigjiga links to the markets in Somaliland and the Gulf states. These routes connect major pastoral towns and also lead to towns and cities where target consumers of camel milk and meat reside, Muslims and Somalis, whether it is within the country or abroad. Further study is needed to determine the volume of trade and milk prices on these routes. The volume of milk consumed in Addis Ababa has now reached 2600 liters per day, based on figures collected during fieldwork for this research.

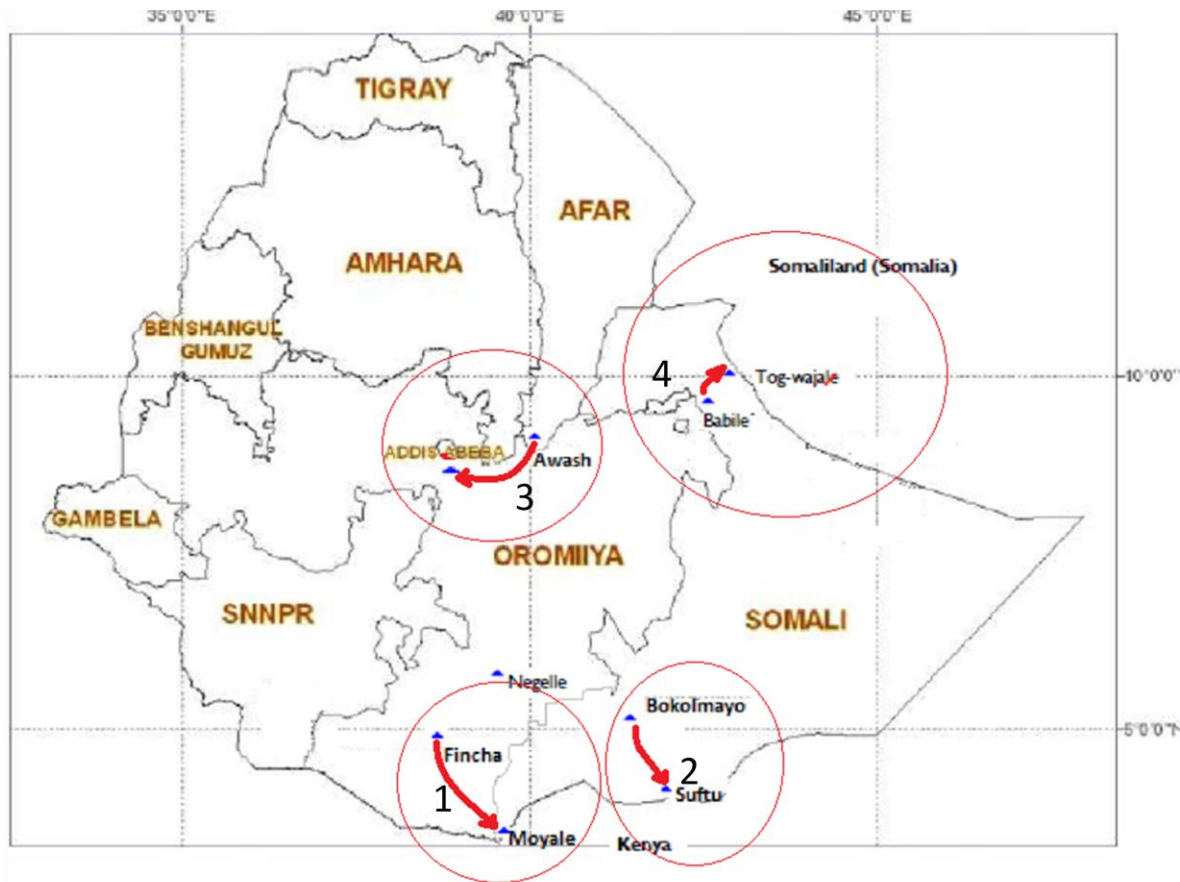


Fig 2: Map showing milk trading roots

f) Camel Commercial value: A new factor in pastoral livelihood

Beside its traditional values as domestic animals to pastoralists, the commercial dimensions added value to camels in Ethiopia and the Horn of Africa at large is of recent event. Camels were as marginalized as their herders are not even getting enough attention in the academic field of veterinary science study as compare to swan. In Some countries like Kenya it is not recognized as food animal officially until now (Hussein Mohamed, 2010 University of the Bush Presentation). Camels export from Ethiopia is a booming business supporting local economies, generating employment and contributing foreign earning to national economy. Camel fattening centers emerging in the rift-valley ranging from Adami Tulu to Matahar indicates the commercial value of camels. Abdi, are there any documents that provide some data on the number of camels being fattened, and the monetary value of camels that are exported from these fattening centres? You might check Tufts University reports.

On the other hand, due to environmental factors many pastoral tribes in Ethiopia, who are traditionally cattle herders like Boran and Hamar now opt to breeding camel due to widely held perception of increasing frequency and intensity of draught, bush encroachment and land degradations. Increased bush encroachment has been observed throughout Ethiopia’s pastoral areas and was one of the

reasons which made rearing browsers a better option than their grazers counterparts. From this brief background and context, the next section will deal with case study on pastoralists' innovation on camel dairy in Godey town of Somali regional state.

3. Gode case study

In this section we are going to put results of the case study conducted in Gode town. The results includes analysis of the socio-demographic characteristics of innovation adapters, the reasons why people has adapted the new system of camel milk production, camel husbandry in the new system and most importantly the production and economic value of the new camel production system.

Socio-demographic characteristics

Table: 1 Socio-Demographic Characteristics of the pastoral innovation adapters

	Age	Number of children	Livestock holding			
			Camel	Cattle	Shoats	donkey
Mean	42.80	5.92	2.44	0.56	3.80	0.44
Standard deviation	9.80	1.681	1.53	1.93	7.25	0.71

Source: survey result

Table 2: Level of education of household heads

Level of education	Illiterate	Can only read Quran-k	Read and write Somali	Primary education	Secondary education
Frequency	-	15	8	2	1
Percentage	-	57.7%	30.8%	7.60%	3.80%

Source: survey result

The above table explains the socio-demographic characteristics of the pastoral innovation adapters in terms of age of household head, number of children, educational level and livestock holding. The analysis shows that the average age of innovation adapters is 42 years, it also shows that the average children per family is 5.92 which is even higher than the national average family size. Educational background of sample household heads is an important feature that determines the readiness of household heads to accept new ideas and innovations. The majority of the sample household heads, 57.7% can only read Quran, while about 31% of them can only read and write Somali. Those who have formal education are not more than 10%. The majority of adapters are from **Rer-abdile** sub-clan.

a) Initiation of the Innovation

Coming to the issue of how the innovation come to existence, majority of the respondents, 61%, indicated that the innovation was started by returnees who came from Somalia Republic there while 33% believed it was started by pastoral communities who have lost their livestock to drought. The remaining

6% argued that the innovation was started by the pastoral community in the area. Regarding the first adapter of the innovation almost all the respondents pointed their finger towards a 75 year old man named *Caafi Mascud*.

Box 1: case study: the initiation of the innovation



One day in early 1990's, I took a she-camel to market in Godey town but failed to secure a fair price. Unable to return it back, I decided to have it here with my family in Godey town. I have been to neighboring countries where camels are kept in urban areas and their milk sold to urban residents in high prices. It naturally came to me then why not I use this opportunity and start settled dairy camel production and capitalizes on high camel milk prices. This was how the new scheme started

The pastoral innovation at hand involved breaking certain cultural attitudes, which made people believe that camels cannot live in or around urban areas. Those who adapted the system in its earlier stage indicated that many people did not support the idea of keeping camels in the town. Various reasons and beliefs were raised to negate viability of the new scheme. There is also a Somali saying “**Sheelo iyo Geelba waa laqariyaa**” which means “**camels and Sheelo (hanging tissue under human testicles) should be hidden**”. Coupled with the general believe of camels to be kept as private parts, there is also a belief by pastoralists that if camels are seen by urban poor and farmers, they would fall ill and may die too. Others who opposed the system based their argument on the protection of the traditional camel husbandry system, arguing that the system will distort the culture of the pastoral community.

Table 3: Reason for adapting the innovation

Reason for adaption	Frequency	Percentage
Drought	17	68%
Attracted by the benefit the earlier adapters achieved	6	24%
Market opportunity	2	8%

Source: survey results

Traditionally pastoralists rear livestock in far rural areas, with no basic social services and no market opportunity for their produce. But recently as identified earlier more and more pastoralists are joining others to start urban camel husbandry.

In the study we tried to identify the main reasons/factors that made the respondents adapt the new system. Even though findings of some studies contradict their perception (**Devereux, 2006**) majority of respondents believe that frequency and intensity of draught has increased impoverishing the pastoral

community and raising their vulnerability. In 2009 alone, Disaster Prevention and Preparedness Bureau of Somali regional State has indicated drought has affected almost half of the regions' population. From the study at hand two out of three adapters of the new innovation indicated that the reason they adapted the new production system was because of prolonged drought that affected the traditional production system they relied on., on the other hand 24% of the respondents pointed out that they were attracted by the change that they have observed on the lives of early adapters. Only 8% argued that they have joined the new production system because of the market opportunity it offers. Adaptors of the new initiative do not solely depend on their camel milk for their livelihood. They are also involved in farming, sale of their labor, pity trades etc.

From the results above we understand that in this particular community most of the adapters of the system are pushed in to it rather unwillingly. It also shows that this has become a coping strategy for pastoral communities who have lost most of their livelihood base. One challenge that the pastoral community face is the wastage of milk during good production years due to the inaccessibility of urban markets, and as expected this has affected pastoralist's decision to involve in the new production system. On the other hand, pastoral areas are experiencing the highest rate of growth of small towns and this is creating market access for pastoralists.

Box 2: case study: factor behind the innovation

The effect of 2000 drought that killed his livestock and coincidentally the sickness of his wife caused his move to town. When he submit his wife to hospital's emergency room he was asked a lot of money for the service. He paid what he had at hand, but not enough. After a week he was in debt of 500 birr. Convicted by changes he observed on livelihood of early adaptors, he brought two milking camels from what has left of his herd. With in a week of milking the camels he was able to pay the debt and since then his family daily subsistence depends on the two camels. He also built a house, 12 goats and one she-camel form the proceeds of milk sale. His 7 children are all in school except a girl.

Source: Interview with adapter in Godey

There are many driving forces behind camel's milk marketing. For the sake of clarity and the purpose the study three distinct but interlinked factors found relevant discussing. First, the return of large number of refugees from Somalia in late 1980s and early 1990s bringing with them business skills and semi-urbanized culture that influenced locals who don't have the concept of commercialization of pastoral products at scale than fulfilling some basic house hold needs. Second, the growth of towns following the Federal system of governance based on ethnic –linguistic boundaries that attracted many pastoralists for getting basic services such as health, education, food aid and commercials goods. The use of local languages in government administration remained one important factor for the swelling urban population in pastoral areas in general and that of Somali Region in particular. Third, the devolving of power and resources to the local administration avail huge cash that can attract pastoralists to commercialize milk products as the demand for milk increase from urban dwellers.

b) Camel husbandry in the new system

The average camel holding of HHs involved in the new initiative is 2.44 camels, made of mostly lactating she-camels and their calves. Dry ones are sent back to family members of relatives in rural areas

as it is cheaper to keep them there. Dry she-camels are also taken to rural areas for impregnation as male-camels are found only there. In the new system, men are responsible for taking care of camels according to majority of respondents, 64%, while the remaining 36% of respondents contend that HHs as whole are involved in day-to-day care for camels. Also as has been done in the traditional production system, it is men who milk camels in the system also. .

As shown in Table 4 below, the major sources of feed used in the new system is a mix of natural rangeland and privately enclosed grazing lands. Adaptors of the new initiative rely during wet seasons on natural rangelands found in close-by vicinities while resorting to their own or renting private enclosures during dry seasons. One-fifth of respondents still rely only on communal rangelands to feed their camels. The remaining, 24%, added that they also purchase forage from farmers during the dry season. As a part of new trends emerging in Somali region, renting of private enclosures and purchase of fodder show efforts on the part of adaptors of the new camel dairy initiative to live with expanding private enclosures and capitalize on booming fodder markets.

Regarding the distance that they move to access rangeland, it differs from season to season. As expected it takes longer during the dry season as they move up to 17kms to get pasture while during the wet season the movement is not more than 8kms. Blood, soup made from shoats bones and heads and oil mixed with sugar also offered as feed during dry seasons and believed to have a quick recovering impact. This practice is also found in the traditional production system, the new production system adaptors has in fact brought this from the traditional one.



Fig 3: Camel being fed soup made of shoats bones, head, oil and salt

No special housing is made as individuals keep their herd on open lands and use fencing during windy times when night hours are extraordinarily cold and believed to ill camels. No specific breeds were used in the new initiative, adaptors rely on what is left of their herd or they got from their relatives. Herding is done after pooling individuals' camels together in alternatively by members of the cooperatives. This is mainly the case during wet season when communal rangelands are used. But during dry seasons, individuals when they use their own or rent private enclosures, individuals keep their camel separately.

Table 4: Source of feed and grazing for camels

Source	Freq.	%	Distance of natural feed sources			
			Shortest distance during dry season	Longest distance during dry season	Shortest distance during normal season	Longest distance during normal season
Common pasture land only	5	20%	10km	17km	5km	8km
Composition of common pasture land and private grazing land	14	56%				
Composition of common pasture land, private enclosure and purchase of forage	6	24%				

Source: survey results

Almost all respondents agreed that they use the combination of traditional and modern medicine when the animals fell sick. The unusual feeding mechanism like blood and goat soup is part of the traditional medicine that they use. The following table presents list of diseases, respondents fear risks camel health in the new system.

Table 5: List of diseases respondents raised as their prime concern

S/N	Disease	Rank	
	Local name	Scientific name	
1.	Kudka	Anthrax	2
2.	Shimbir (goor-laab)	Nervous disorder	5
3.	Dhukaan	Trypanosomiasis	1
4.	Isboor	Bovince ephemeral fever	4
5.	Qanjidh	Mild form of antrax	3

Source: survey results

Table 5, explains those diseases that the respondents identified as series to their production activities.

Box 3: case study: Common camel diseases respondents are facing

There are diseases that we knew even when we were in the rural areas, but there are also diseases that we observed only recently. These include diseases like Isboor and Goor-laab. They are new to me and also to most of us. Isboor especially occurs very frequently than the other diseases.

“This revealing by the adapters of the new system indicates that there is some element of truth in what the pastoral community believes i.e. camels will be sick if brought to urban areas. But this is something that needs further investigation to understand more”.

Source: interview with urban pastoralist

c) Production and economic benefits

Because of various factors among which availability and quality of feed the main one, milk production varies between wet and dry seasons. During dry season milk produced can go as low as 1.7 liters/day while the production could go as high as 3.7 liters/day in rainy season per she-camel.

The price per liter of camel milk also varies across seasons in the area, 15 birr/per day and 10 birr/per day in dry and rainy seasons. The variation is mainly caused by the change in the supply, because average production per she-camel in dry season is 2.43 liters while it is 3.38 liters in rainy season, this shows that production increases by 40%, and price decreases by 33%. This indicates that the change in the production level mostly explains the higher variation in price.

The price variation can also be explained by the camel population in the district compared to other districts. Godey in 2000 G.C. had an estimated camel population of 2880 while Filtu and Wardheer districts had an estimated camel population of 208,720 and 213,012, respectively. In these two districts the price per liter of camel milk does not reach 10 birr even during dry season.

Table 6 below shows variation in the milk production between different seasons per day.

Production during dry season (in liter)			Production during wet season (in liter)		
Lowest production	Average production	Highest production	Lowest production	Average production	Highest production
1.7	2.43	2.66	2.68	3.38	3.7

Source: survey result

Table 7: Average production, consumption and marketing of different seasons per household per day.

Production during dry season (in liter)			Production during wet season		
Average production	Home consumption	Marketable surplus	Average production	Home consumption	Marketable surplus
3.9	0.98	2.9	6.25	1.27	4.52

Source: survey result

From Table 7, we learn that the average production per household during the dry season is almost 4 liters of which one liter is used for home consumption and the remaining 3 liters are marketed. Given the average price of 15 birr per liter during the dry season we derive that the average income of these households even during the harder times is 45 birr per day, which is an average income for the household. During the normal season the average production is 6.25 liters and the average milk which the adapters of the new system market during this time is 4.54 liters. Given an average price of 10 birr per liter during the normal season, this shows that the average income of the family remains the same. The significant increase in production during the normal season is offset by the decrease in price, which is understandably caused by the increase in supply of milk. From this we learn that the increase in production is around 16% while the decrease in price is more than 30%. This shows that the supply of camel milk in the two seasons is price inelastic. On the other hand, the proportion of milk that is sold in the two seasons differs. During the dry season 74% of production is marketed while during the normal season 72% of the average production is marketed. This indicates a kind of coping strategy that the households employ during the dry season to maintain their living standard.

In order to calculate the daily and annual camel milk production in the town we need to have an estimation of the number of households practicing the innovation. It seems the estimations that we have vary significantly, the information we obtained from SoRPARI Gode centre indicated that there are 150 dairy camels in the town while the estimation we have received from those who are involved in the urban camel dairy indicated there are around 800 dairy camels in Gode town. If we base our estimation on 150, given an overall average production of 3 liters and an average price of 12.50 birr, we find that the daily revenue from this is 5625 birr. On the other hand, if we take 800, the average daily revenue becomes 30,000 birr. Taking the average of the two which is around 450 dairy camels, we find that the daily revenue becomes 16,875 birr.

d) Linkage between The new and traditional production systems

As mentioned earlier, there is still a link between traditional system and new system of settled dairy camel production. Somalis by nature has very strong ties among its clan and tribe, and this allowed those who practice the new production system to be able to keep dry she-camels in the rural areas either with family members or clan relatives. Only milking she-camels and their calves are kept in urban areas while dry she-camels and male camels are left with part of the family or relatives in rural areas. In this way, the new system allows pastoralists to make use best of both urban and rural centers; easy access to markets and abundant fodder. The connection between the old and new system also makes the new system less alien to pastoralists and disruptive to traditional institutions and beliefs. Besides few she-camels, piece of irrigable land you own or owned by a friend and labor, connections with pastoralists living in rural areas is crucial to participate in urban camel dairy initiative

Rising settlement and urbanization is reality of all pastoral areas serving both as opportunity (by expanding market accessibility) and also a challenge (an epi-center of degradation). Adaptors of the new system has been able to live off on the milk produced by few camels they have and also afford to buy

supplementary feed during dry and drought periods. With expanding urbanization, relying on natural fodder mostly does not seem to be sustainable as practitioners of the new system are doing now. They may be forced to switch more to supplementary feeds. However, because of the efficiency of camels in conversion of dry matters to milk (on average 2KGs of fodder for every liter of milk) settled dairy camel production is more environmentally sound in arid ecological zones than traditional less efficient dairy cattle production (Stiles, 1987)

According to informants, the new system has many advantages over the old system, the major advantages mentioned including:

- ✓ Lower workloads as number of camels held by HHs is a quite a few and herding is shared by members of cooperatives
- ✓ Better access to market and opportunity to sell their produces (camel milk) at high prices. Most of the interviewees contend that livelihoods of HHs have improved citing cases of individuals being able to buy plots of lands and build houses.
- ✓ Easy access to other basic social services such as education and human and livestock health services which explains why most of the interviewees have most if not all of their children in schools, astounding achievement relative to pastoralists in rural areas.

Box 4: case study: traditional and new camel husbandry systems

I went to Kenya seeking better life, but returned when my father died and started life in the bush again. However, I could not sustain rural life and moved my wife to town. I came to Godeyy one day and had some discussion with Caafi. He convinced me of the benefit from milking camel in town. Then I went back to my rural community and asked my family to give me one camel. They refused, and I stole one camel from them with Somali traditional house and brought to town. Joining the dairy camels group was so difficult as land for grazing and holding camels was in competition. The milk from town camel is not as such more than pastoralist camel, but the market for milk has an added value for family income strengthening purchasing power for food items. The income from milk is totally managed by my wife, she will not allow if I ask for a cent.

Source: interview in Godey

Box 5: experts view

The pastoralist in this area has first adapted dairy cattle and was using it as a source of income and livelihood, it was after this that pastoralists started shifting their attention towards camel. But now the situation is changing quickly and people are preferring dairy camels than other kind of livestock species, and this is mainly due to the high milk production of camels, their resilience to drought and the high price of camel milk compared to other kind. The system has expanded this much because of recurrent droughts that affected the pastoral community. Our institute is assisting those who are involved in this innovation through the provision of professional advice and also drugs for their animals.

Source: discussion with Head of Gode Agricultural Research Center Manager

e) Major Challenges to Camel Dairying in Gode Town

The following represents the major challenges of dairy camel production in Gode Town:

- ✓ Competing land uses near to expanding towns: diminishing natural fodder for camels as the town expands and fodder plants are cut for construction and charcoal.
- ✓ Lack of recognition as town residents who depend on camel herding for their living. Local governments do not recognize the existence of dairy camel production schemes and are not to set aside plots for this viable venture and offer them various services they require such as veterinary services. For instance, no land allocated for dairy camels; every time the town expands the camels are pushed further out.
- ✓ Lack of support and incentive for the promotion of the system as a viable economic activity by offering land for fodder production, supply of motor pumps for irrigation and continuous extension services from professionals. *Somali Region Pastoral and Agro-Pastoral Research Institute has supported town dairy camel herders by providing them with animal medicine and fodder and at initial stages by organizing them into cooperatives.*
- ✓ Camel herding and management skills necessary to run successful dairy productions are not passed onto the younger generation growing up in towns. This will affect the future business of dairy camels in town unless some actions are taken.
- ✓ There is an increasing demand for camels' milk by growing urban populations, but the younger generation raised in towns may not have an interest in drinking camel milk leading to a decrease in its demand. Example, interviews with families showed that camel milk consumption of children in Gode is not significant.
- ✓ In Addis Ababa, an estimated 24,000 Somali refugees consume only 1,600 - 2,000 liters per day of camel milk from the Karayu area. This is a very insignificant amount; per capita consumption is less than 8% of the total population. One of the reasons given by one of the suppliers, Jama Jiis, is it is only people age 40 and above consume camel milk. Others cannot afford the high cost of camel milk compared to cows milk and choose to consume imported powder milk. Some growing up in refugee camps never developed a taste for camel milk because it was not available. However, when one looks at the overall trend both at the national and global level, the market for camel milk is expected to expand because of the real content or the myth of its medicinal benefits.

f) Winners and Losers from the New Innovation

Town residents forage producers, petty traders involved in camel milk trading, and users of the innovative dairy camel production system are benefit from the new system in one way or the other. Women and poor pastoralists on the verge of dropping out from main pastoral production systems are also the champions of town dairy camel innovation. The income generated from milk sales is managed by the women; this has significant advantages for the family as the income will mostly be expended on family related activities as opposed to being managed by men, whose expenditures may include other things and/or activities.

The youth in the communities appear to be the biggest losers. Most of the younger generation in towns attend school and have no interest in looking after camels; the urban environment attracts their attention. Their lack of interest may deny them the benefits of acquiring camel herding and breeding skills. This will affect the longer term sustainability of camel dependant pastoralists as those skills cannot be easily transferred to the upcoming generation posing further threats to pastoral livelihoods in the uncertain and highly volatile environment. On the other hand, these same youngsters have had the opportunity to attend school due to town camel dairy innovation.

According to the study interviewees, the other losers are the poor pastoralists who used to depend on sharing of milk from camels in the traditional herding systems by herding and protecting camels. Town camels' dairy is solely a private venture for a family with less demand for support from extended family members. The currency of camel milk has changed in the camel dairy initiative – from something shared amongst the extended family to a commodity to be sold.

4. The Way Forward

Because of demographic, socio-economic and political factors, Ethiopian pastoralists are settling down - triggering unprecedented growth of small towns and the creation of small towns throughout the pastoral lands of Ethiopia.

Pastoralists have had to adapt to new situations through pastoralist-led innovation or risk being left out - without sustainable incomes. One initiative taken by 'town pastoralists' is camel dairy production in and around small towns and urban centers. This effort by pastoralists to capitalize on growing towns has paid off and participants of the new initiative have been able to secure sustained livelihoods for their families. New institutions tailored to the new dairy camel initiative, cooperatives, have been established without undermining traditional clan based institutions. The early adaptors of the initiative, poor pastoralists and returnees for Somalia, were vulnerable before taking on board the new initiatives and their vulnerability has since declined. Our study shows that the growth of small towns may substitute the notions of pastoral settlement while at the same time it sustains pastoralism in new settings.

Our study shows the real possibility and bright future of rearing camels in urban centers. Town pastoralists have been able to make new arrangements in the form of cooperatives to herd their camels together and use both communal rangelands and private enclosures to feed their camels. Moreover, the strong connection between the old and new system which still exists makes the new system less alien to pastoralists and less disruptive to traditional institutions and beliefs.

With the rising demand for fresh camel milk because of health (diabetes) and higher urban populations, settled dairy camel production is surely the future of pastoralism. Technical challenges of raising specialized dairy camel breeds and research on camels' feed exist and will need to be addressed. Help from governmental and non-governmental organizations is required to enable pastoralists to cope with existing realities and to improve on the initiative. Help may come in various forms from the mere recognition of the innovation so that grazing sites will be allocated for town-pastoralists, to delivery of trainings and support such as veterinary medicine, irrigation pumps for fodder production and provision of micro-finance (loans). Furthermore, improving conditions for pastoralists to have easy access to urban centers to sell camel milk will improve the livelihoods for many pastoral families who opt to continue with a mobile production systems. The demand for fresh camel milk is much greater than the current level of supply. The excess milk production in normal pastoral production systems can be tapped if transport means are improved by providing pastoralist families with incentives to invest in cooperative milk taxis.

The following recommendations are made to improve the camel dairy production industry initiated in Gode with possible replication to other areas.

- ✓ By using the Gode initiative as a model, the regional government should recognize this initiative and include it in the extension package for pastoralists moving to towns. The possibility of replicating this model to other towns that have better vegetation than Gode i.e. Charati, Filtu and Moyale, could improve the life of many pastoral households. Publicizing the Gode initiative on mass media would educate the public and help spread understanding of this new innovation as this trend is taking place around major towns in the region.
- ✓ The SoRPARI experiment on large scale fodder production on irrigated farms should receive adequate financial and technical resources.

- ✓ Town camel owners should be organized into cooperatives with legal backing. They should be provided with means of transport - pickup trucks that can be imported duty free - to be used as milk taxis. Mobile pastoralists need to be able to capitalize on surplus milk production as well when they have been forced to locate their own dairy herd at far distance from town due to lack of fodder.
- ✓ An allocation of adequate land within the town should be set aside for camel dairy owners for the establishment of camel milk villages.
- ✓ Further research on appropriate technologies for processing camel milk such as preserving surplus milk from pastoral areas during times of plenty to supply markets when production is scarce, should be implemented.

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